APPLICATION FOR PATENT

TITLE: DECONTAMINATING LAWN VEHICLES AND TREE SHREDDERS

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SUMMARY OF THE INVENTION:

[001] The present invention is directed to novel lawn equipment vehicles and tree shredders or "chippers" designed to decontaminate lawn and tree cuttings as well as the equipment, vehicles, and shredders themselves.

BRIEF DESCRIPTION OF THE FIGURES:

[002] Fig. 1 is a side view of a lawn mower employing the present invention.

[003] Fig. 2 is a rear view of the lawn mower illustrated in Fig. 1.

[004] Fig. 3 is an enlarged side view of the nozzle and bracket assembly.

[005] Fig. 4 is a schematic drawing of an exemplary wiring scheme between the power source and tank pump.

[006] Fig. 5 is a side view of a shredding machine employing the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS:

[007] The present invention is directed to vehicles and equipment, namely lawn mowers and trees shredders, that are designed to decontaminate lawn and tree cuttings as well as the vehicles and equipment themselves from various agricultural pathogens, thereby preventing the spread of the pathogens to adjacent lawns. As used herein, "agricultural pathogens" include, but are not limited to, any variety of bacteria, fungi, parasites, insects, and the like that capable of causing agricultural diseases. Exemplary agricultural diseases include, but are not limited to, citrus canker.

[008] Referring now to the figures, the present invention is directed in part to a vehicle, such as a lawn mower **1**, that is designed to store and dispense a chemical agent onto the areas of the vehicle itself as well as the underlying lawn area. As used herein, "chemical agent" includes, but is not limited to, herbicides, bactericides, fungicides, and insecticides. The chemical agent is illustrated in the figures as a spray **30** exiting various nozzles **4**, as discussed in more detail below. In a preferred embodiment, the chemical

agent is substance suitable for eradicating citrus canker, which is particularly prevalent in Florida and other citrus growing states and countries.

[009] The lawn mower **1** may be a conventional lawn mower, comprising a chassis **10**, a lower frame **101**, and a set of wheels **19, 20** secured to the front end **40** and rear end **41** of the lower frame. Like other lawn mowers, the inventive lawn mower includes an engine **22** connected to an exhaust pipe **23**, a steering handle **24** for maneuvering the lawn mower, and preferably a seat **25** which the operator of the mower may sit upon while operating the lawn mower. The lawn mower includes a blade assembly or mower cutting deck secured to the lower frame of the chassis, the blade assembly comprising a set of cutting blades **21** disposed within a housing guard **2**.

[010] Mounted onto the lawn mower is a storage tank **3** for storing the chemical agent. The storage tank may be secured to a bracket portion **6** and support brace **5**, that form a part of the chassis of the lawn mower. Alternatively, the bracket portion **6** and brace **5** may be removably attached to the chassis of the mower. The storage tank **3** has connected to it a pump **11** which, in turn, is connected to a hose or fluid line **9** used to carry the chemical agent. A series of nozzles **4** are secured to the lower frame of chassis at different points and are connected to the pump via the fluid lines. The nozzles may be secured to the chassis by one or more brackets **10**, as shown. When the pump is activated (by an on-off switch for example), the chemical agent **30** is carried through the fluid lines **9** and through each nozzle **4**. In order to decontaminate the cutting blades of the mower during operation, a set of nozzles are disposed within the housing guard **2** above and/or to the side of the cutting blades **21**. When the pump **11** is activated, the chemical agent is pumped within the housing guard **2** to coat the inner surface of the housing guard as well as the cutting blades **21**.

[011] The lawn mower may further include a set of nozzles **4** disposed beneath the lower frame **101** just behind the front set of wheels **19** but in front of the housing guard **2.**. When the pump is activated, chemical agent **30** is carried through the fluid lines and through the nozzles to cover the lawn surface **G** being mowed. Optionally, a set of nozzles may be disposed about the sides and/or rear **41** of the chassis, such that upon activation of the pump, chemical agent may be sprayed along the ground. The pump employed with the present invention may be a DC 12 volt pump, for example, pumping

at a pressure of at least 25 psi. Preferably, the nozzles employed in the present invention have a diameter sufficiently large to allow at least a 2-foot wide spray of chemical agent. It will be appreciated by those ordinary skill in the art, however, that the size and positioning of the nozzles within the housing guard and along the chassis of the lawn mower may be adjusted as desired, depending upon the size of the lawn mower, pump, and area to be mowed, for example. Moreover, the placement and means of attachment of the pump to the chassis is not critical to the invention, and thus, may be modified from that illustrated in the figures.

[012] The invention may also include a hand-held wand **7** that allows the operator to spray chemical agent on surrounding plants and trees, for example. An optional shut-off valve **8** may be employed near the pump for activation by the operator of the vehicle without shutting off the pump, so that chemical agent may be re-routed to the hand-held wand **7** instead of the underlying nozzles **4** when the operator wishes to spray only the surrounding foliage with the chemical agent.

[013] The inventive system is designed such that the lawn equipment, such as a lawn mower, for example, may be operated without necessarily activating the pump to spray chemical agent. As discussed above, an on-off switch may provided to activate the pump. In addition, the storage tank, pump, fluid line assembly, and nozzles may be installed on existing lawn mowers or similar lawn equipment, for example, without effecting the overall width of the equipment, the storage tank and pump, for example, preferably be mounted at the rear of the mower behind the seat.

[014] Referring now to Fig. 5, the present invention also includes a tree shredding machine or "chipper" **200**. Fig. 5 is a simple schematic illustrating the hopper **201** wherein foliage, such as tree branches, leaves, shrubbery, and the like (not shown) are fed into the machine **200** through an open mouth **202** of the hopper **201** in the direction of arrow **A**. The open mouth **202** of the hopper **201** has a diameter sufficiently large to receive the foliage fed therein. The hopper is secured to a grinding blade assembly, referenced generally at **203** (the actual blades are not shown for ease of illustration, it being generally recognized by the skilled artisan that any blade assembly used in conventional chippers may be employed). The machine also has a powered vacuum assembly **207** to draw in the foliage fed through the hopper into the grinding blade

assembly. As the foliage is fed into the machine and shredded, the resulting processed foliage is ejected through a chute **204** in the direction of the arrows and arrow **B** into a container or truck storage area (not shown) for subsequent disposal.

[015] Secured within the open mouth **202** of the hopper **201** is at least one nozzle **402**, which in turn, is secured to a fluid line assembly comprising one or more hoses **401** in communication with a storage tank **400**. When the pump **403** on the storage tank is activated (by an on-off switch, for example), chemical agent contained in the tank is pumped therefrom, through the hoses nozzles **402**, and onto the foliage being fed into the hopper. Fig. 5 illustrates a single hose **401** in communication with the storage tank **400**; however, for ease of illustration, the specific connections to fluid lines and the actual nozzles **402** themselves are not shown, since it is understood by those of ordinary of skill in the art that the connecting means and the path of the fluid line assembly connection between the tank and nozzles may be achieved any number of ways.

[016] Alternatively, or in addition to the nozzles **402** secured within the hopper **201**, one or more nozzles **402** may be secured within the open mouth **205** of the exit chute **204** to spray chemical agent **30** onto the processed foliage exiting out of the machine **200**. As described above for the lawn equipment, the chemical agent **30** may include, but is not limited to, herbicides, bactericides, fungicides, and insecticides. It will be recognized by those of ordinary skill in the art that the shredding machine illustrated in Fig. 5 is merely a schematic designed to show the main features of conventional shredders. For example, the embodiment in Fig. 5 includes a wheel **208** for aid in transporting the chipper. In addition, the storage tank **400** is shown mounted rearward of the chipper. Thus, it will be appreciated by the skilled artisan that a variety of shredding machine designs may be employed without departing from the spirit of the present invention provided the machine includes a means for applying the chemical agents described herein onto the foliage entering the hopper and/or existing the chute. The nozzles used to apply the chemical agent may be positioned in any manner within the machine, within the open mouth of the hopper, the open mouth of the chute, and/or at very places within the machine (not shown).

[017] In all of the embodiments described and illustrated in the figures, the present invention is particularly useful in preventing the spread of vegetative pathogens by

allowing for decontamination of the lawn equipment and shredding machines during operation as well as the lawn and foliage refuse created by the lawn equipment (e.g. grass cuttings generated by the lawn mower) and tree branches and other foliage shredded by the shredding machine.

[018] The foregoing disclosure and description of the invention are illustrative and explanatory thereof, and various changes in the size and location of the components, the number of nozzles, and the design of the lawn equipment and shredding machine, for example, may be made without departing from the spirit of the invention.